19. (a) Explain the Watson-Crick model. (4)

(b) Discuss the difference between DNA and RNA. (6)

20. (a) Discuss the reaction and mechanism of Quinoline. (5)

(b) Explain the reaction and mechanism of Benzothiophene. (5)

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Shanmuga Industries Arts & Science College
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**APRIL/MAY 2025**

# 23PECH33B — BIOMOLECULES AND HETEROCYCLIC COMPOUNDS (ELECTIVE – V)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Describe the physical properties of glucose.
2. Write the structure of cellulose.
3. Give the functions of estrogen and cortisol.
4. What are sterols?
5. Define electrophoresis.
6. What is gel filtration?
7. Give any two functions of Nucleic acids.
8. Draw the structure of the Nucleoside.
9. Write any one method for the preparations for benzofuran.
10. What is Fisher-Indole synthesis?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Illustrate the structure and properties of starch and glycogen.

Or

(b) Discuss the glycolysis of carbohydrates.

12. (a) Explain importance of androgen and estrogen. in the biological system.

Or

(b) Demonstrate the biosynthesis of cholesterol from squalene.

13. (a) Illustrate the role of Nucleic acids..

Or

(b) What is the urea cycle? explain in detail?

14. (a) Explain the solid phase synthesis of oligonucleotide.

Or

(b) Discuss the structure and synthesis of Nucleic acids.



15. (a) Discuss the reaction and mechanism of Isoindole.

Or

(b) Explain the reaction and mechanism of lsoquinoline.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. (a) Elaborate the physical and chemical properties of sucrose and lactose. (6)

(b) Explain the biological role of carbohydrates. (4)

17. Explain the structure and function of non-steroidal hormones.

Adrenaline and thyroxin.

18. (a) Explain the Biosynthesis of protein. (5)

(b) List the separation and purification processes of proteins. (5)